

REMARKS

Applicants respectfully request further examination and reconsideration in view of the above amendments and the comments set forth fully below. Claims 27-30, 35-38, 40, 42, 44-48 and 50-52 were pending. Within the previous Office Action, Claims 27-30, 35-38, 40, 42 and 44-52 have been rejected. By the above amendment, new Claims 53-58 have been added. Accordingly, Claims 27-30, 35-38, 40, 42, 44-48 and 50-58 are now pending.

Rejections Under 35 U.S.C. § 102

Within the previous Office Action, Claims 27-29, 35-38, 40, 42, 44 and 52 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,368,823 to McGraw et al. (hereinafter “McGraw”). The applicants respectfully disagree. McGraw teaches automated synthesis of oligonucleotides. McGraw teaches that columns 11 are formed into a carrier plate 8 or built to fit within Luer fittings. McGraw does not teach a vial comprising a bored interior having a consistent dimension to hold a frit for retaining material within the **vial directly above the frit** and maintaining a consistent flow through the bored interior during a flushing procedure.

A close-up view of the reaction column 11 taught by McGraw is shown in Figure 2. [McGraw, col. 5, lines 49-52, Figure 2] McGraw teaches that a Luer fitting 15 is fitted into a bulkhead 16. [McGraw, col. 5, lines 45-52, Figures 5 and 6] McGraw then teaches that the column 11 is inserted into the Luer fitting 15. [McGraw, col. 5, lines 51-52, Figures 5 and 6] McGraw does not teach that the column 11 is fitted directly into a bulkhead 16. Accordingly, McGraw does not teach that a *pressure-tight seal is provided directly between the column 11 and the bulkhead 16*. In contrast, McGraw teaches that the column is inserted into the Luer fitting 15, which has previously been inserted into the bulkhead 16. McGraw does not teach a *direct* fit between the column 11 and the bulkhead 16.

Within a previous Office Action, it was stated that the McGraw reference shows the Luer fitting as a part of the bulkhead 16 since Figure 5 shows the Luer fitting extending through the bulkhead. The applicants respectfully disagree. McGraw does not teach that the column 11 is *directly* placed into the bulkhead 16. With respect to Figure 5, McGraw teaches

[t]he bulkhead 16 is sealed to the top of the solid frame 17' by means of the seal 95 such that the exit basin 17 is not connected to the atmosphere in the reaction chamber 10 except through the *Luer fittings 15 which receive the reaction columns 11*. [McGraw, col. 5, lines 44-48, Figure 5, emphasis added]

With respect to Figure 6, McGraw teaches “[t]he column 11 has a conically-shaped outlet end *for insertion into a mating Luer fitting 15.*” [McGraw, col. 5, lines 51-52, Figure 6, emphasis added.] The Luer fitting 15 and the bulkhead 16 are not one entity. As is well known in the art or can be discovered by quickly searching Google, Luer fittings 15 are a completely independent component, separate from the bulkhead 16. Although Figure 5 shows the Luer fitting 15 extending through the bulkhead 16, that does not make the two components one. The Luer fitting 15 of McGraw is inserted into the bulkhead 16 and then the column 11 is inserted into the Luer fitting 15. Therefore, McGraw teaches a column 11 being inserted into a Luer fitting 15 which is connected to a bulkhead 16. Thus, there is no *direct* contact between the column 11 and the bulkhead 16. Accordingly, McGraw does not teach that a pressure-tight seal is provided *directly* between the column and a cartridge, since for a seal to be *directly* between the column 11 and cartridge 16 there could be nothing in between. In McGraw, the Luer fittings 15 are in between the column 11 and the bulkhead 16. **McGraw clearly teaches that a Luer fitting 15 is positioned between the column 11 and the bulkhead 16.**

In contrast to the teachings of McGraw, the vial of the present invention includes a support held within the vial *directly* above a frit. [Present Specification, page 3, lines 24-25] The interior of each vial is precision bored to ensure a tight consistent seal with the corresponding frit. [Present Specification, page 3, lines 25-27] The vials are held within a cartridge. [Present Specification, page 3, lines 15-16] The exterior of each vial also has a precise dimension to consistently fit within the cartridge and provide a pressure tight seal around each vial *directly* within the cartridge. [Present Specification, page 3, line 27 - page 4, line 2] As discussed above, McGraw does not teach that a pressure-tight seal is provided *directly* between the column and a cartridge. In contrast, McGraw teaches that the column is inserted into the Luer fitting 15, which has previously been inserted into the bulkhead 16. As further discussed above, McGraw does not teach that a solid support is retained within the vial *directly* above a frit. In contrast, McGraw teaches that the support 100 is positioned between the frit 9 and the frit 9A.

Within the Response to Arguments section of the previous Office Action, it is stated that applicant has not claimed the cartridge and that no structural limitation is provided by the phrase “having an exterior dimension to fit directly within a receiving hole of a cartridge.” The applicants respectfully disagree. As an example, Claim 29 of the present application specifies a “vial comprising an exterior dimension to fit directly within a receiving hole of a cartridge thereby providing a pressure-tight seal directly between the vial and the cartridge. . . .” It is

further specified in Claim 29 that a consistent flow is maintained during flushing procedures by only forming a pressure differential to expel material. Without the exterior dimension forming a pressure-tight seal directly between the vial and the cartridge, the pressure differential could not be created for flushing procedures. Thus, this is more than just any exterior dimension which fits directly in a hole. Furthermore, as discussed in detail above, McGraw does not teach a pressure-tight seal that is provided **directly** between the column and a cartridge. In contrast to the pressure-tight seal and flushing procedures of the present application, McGraw teaches that “[p]referably a vacuum source is connected to the outlet end of the reaction columns to rapidly draw the chemicals from all of the columns simultaneously thus leaving the columns dry and ready to receive the next reagent.” [McGraw, col. 2, lines 17-22] The column 11 of McGraw requires the vacuum to flush the columns because of the absence of the pressure-tight seal. Because of the pressure-tight seal created by the exterior dimension of the vials of the present application, it is not necessary to connect a vacuum source to the outlet end of the vials, as taught by McGraw. This fundamental difference between the vial of the present application and the teachings of McGraw, serves to highlight the distinctions between the presently claimed invention and the teachings of McGraw.

It is further stated within the Response to Arguments section of the previous Office Action, that the pressure tight seal is beyond the scope of the claims. The Applicants respectfully disagree and do not understand how a limitation clearly included within the claims can just be unilaterally dismissed or overlooked. As discussed in detail above, the pressure tight seal limitation gives meaning to the claims. Without the exterior dimension forming a pressure-tight seal directly between the vial and the cartridge, the pressure differential could not be created for flushing procedures and a vacuum, such as taught by McGraw, would be necessary. As described above, it is clearly specified within the claims that a pressure-tight seal is provided directly between the vial and the cartridge. It is further specified in the claims that a consistent flow is maintained during flushing procedures by **only** forming a pressure differential to expel material. As discussed in detail above, without the exterior dimension forming a pressure-tight seal directly between the vial and the cartridge, the pressure differential could not be created for flushing procedures and a vacuum, such as taught by McGraw, would be necessary. Accordingly, the pressure tight seal limitation in the claims cannot just be overlooked.

The independent Claim 27 is directed to a vial comprising a bored interior having a consistent dimension to hold a frit for retaining material within the vial **directly** above the frit and maintain a consistent flow through the bored interior during a flushing procedure by **only**

forming a pressure differential to expel material from the vial and a solid support retained within the vial above the frit after the flushing procedure. As discussed above, McGraw does not teach that a solid support is retained within the vial **directly** above a frit. In contrast, McGraw teaches that the support 100 is positioned between the frit 9 and the frit 9A. McGraw does not teach a flushing procedure by **only** forming a pressure differential to expel material from the vial. For at least these reasons, the independent Claim 27 is allowable over the teachings of McGraw.

Claim 28 is dependent on the independent Claim 27 and adds a further limitation specifying that the vial comprises an exterior dimension to fit **directly** within a receiving hole of a cartridge, thereby providing a pressure-tight seal **directly** between the vial and the cartridge. As discussed above, McGraw does not teach that a pressure-tight seal is provided **directly** between a vial and a cartridge. In contrast, McGraw teaches that the column 11 is inserted into the Luer fitting 15, which has previously been inserted into the bulkhead 16. Thus, it is clear from the teachings of McGraw that a pressure-tight seal is not provided **directly** between the column 11 and the bulkhead 16, but that the Luer fitting 15 is positioned between the column 11 and the bulkhead 16. For at least these reasons, the Claim 28 is allowable over the teachings of McGraw.

Claims 28 and 40 are both dependent on the independent Claim 27. As described above, the independent Claim 27 is allowable over the teachings of McGraw. Accordingly, the Claims 28 and 40 are both also allowable as being dependent on an allowable base claim.

The independent Claim 29 is directed to a vial comprising an exterior dimension to fit directly within a receiving hole of a cartridge thereby providing a pressure-tight seal **directly** between the vial and the cartridge, a bored interior having a consistent dimension to maintain a consistent flow through the bored interior during flushing procedures by **only** forming a pressure differential to expel material from the vial and a solid support retained within the vial above a frit after flushing procedures. As discussed above, McGraw does not teach that a pressure-tight seal is provided **directly** between the column and a cartridge. In contrast, McGraw teaches that the column is inserted into the Luer fitting 15, which has previously been inserted into the bulkhead 16. Thus, it is clear from the teachings of McGraw that a pressure-tight seal is not provided **directly** between the column 11 and the bulkhead 16, but that the Luer fitting 15 is positioned between the column 11 and the bulkhead 16. As further discussed above, McGraw does not teach that a solid support is retained within the vial above a frit. In contrast, McGraw teaches that the support 100 is positioned between the frit 9 and the frit 9A. McGraw also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow

through the bored interior. McGraw does not teach a flushing procedure by **only** forming a pressure differential to expel material from the vial. For at least these reasons, the independent Claim 29 is allowable over the teachings of McGraw.

Claim 42 is dependent on the independent Claim 29. As described above, the independent Claim 29 is allowable over the teachings of McGraw. Accordingly, the Claim 42 is also allowable as being dependent on an allowable base claim.

The independent Claim 35 is directed to a vial. The vial of Claim 35 comprises a bored interior having a consistent dimension to hold a frit for retaining material above the frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial, a top opening through which material is dispensed into the bored interior, a bottom opening of a diameter to retain material within the bored interior when no pressure differential is applied and through which material is flushed during the flushing procedure, an exterior dimension to fit **directly** within a receiving hole of a cartridge, to form a pressure-tight seal **directly** between the vial and the cartridge when the vial is inserted into a receiving hole of the cartridge and a solid support retained within the vial above the frit after the flushing procedure. As discussed above, McGraw does not teach that a pressure-tight seal is provided **directly** between a vial and a cartridge. In contrast, McGraw teaches that the column is inserted into the Luer fitting 15, which has previously been inserted into the bulkhead 16. Thus, it is clear from the teachings of McGraw that a pressure-tight seal is not provided **directly** between the column 11 and the bulkhead 16, but that the Luer fitting 15 is positioned between the column 11 and the bulkhead 16. As further discussed above, McGraw does not teach that a solid support is retained within the vial above a frit. In contrast, McGraw teaches that the support 100 is positioned between the frit 9 and the frit 9A. McGraw also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. McGraw does not teach a flushing procedure by **only** forming a pressure differential to expel material from the vial. For at least these reasons, the independent Claim 35 is allowable over the teachings of McGraw.

Claim 44 is dependent on the independent Claim 35. As described above, the independent Claim 35 is allowable over the teachings of McGraw. Accordingly, the Claim 44 is also allowable as being dependent on an allowable base claim.

The independent Claim 36 is directed to a vial. The vial of Claim 36 comprises a frit, a solid support, a bored interior having a consistent dimension to hold the frit for retaining the solid support above the frit and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial, wherein the solid support and material formed on the solid support is retained above the frit, within the vial, during a flushing procedure, a top opening through which material is dispensed into the bored interior, a bottom opening of a diameter to retain material within the bored interior when no pressure differential is applied and through which material is flushed during the flushing procedure and an exterior dimension to fit **directly** within a receiving hole of a cartridge to form a pressure-tight seal **directly** between the vial and a cartridge when the vial is inserted into a receiving hole of the cartridge. As discussed above, McGraw does not teach that a pressure-tight seal is provided **directly** between a vial and a cartridge. In contrast, McGraw teaches that the column is inserted into the Luer fitting 15, which has previously been inserted into the bulkhead 16. Thus, it is clear from the teachings of McGraw that a pressure-tight seal is not provided **directly** between the column 11 and the bulkhead 16, but that the Luer fitting 15 is positioned between the column 11 and the bulkhead 16. As further discussed above, McGraw does not teach that a solid support is retained within the vial above a frit. In contrast, McGraw teaches that the support 100 is positioned between the frit 9 and the frit 9A. McGraw also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. McGraw does not teach a flushing procedure by **only** forming a pressure differential to expel material from the vial. For at least these reasons, the independent Claim 36 is allowable over the teachings of McGraw.

Claims 37 and 38 are both dependent on the independent Claim 36. As described above, the independent Claim 36 is allowable over the teachings of McGraw. Accordingly, the Claims 37 and 38 are both also allowable as being dependent on an allowable base claim.

The independent Claim 52 is directed to a plurality of vials. Each of the plurality of vials of Claim 52 comprise a bored interior having a consistent dimension to hold a frit for retaining material above the frit and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial, wherein the consistent dimension is consistent for each of the plurality of vials, a top opening through which material is dispensed into the bored interior, a bottom opening of a diameter to retain material within the bored interior when no pressure differential is applied and through which material is

flushed during the flushing procedure, an exterior dimension to fit **directly** within a receiving hole of a cartridge to form a pressure-tight seal directly between the vial and the cartridge when the vial is inserted into a receiving hole of the cartridge, wherein the exterior dimension is consistent for each of the plurality of vials such that any of the vials will consistently fit within the receiving hole of the cartridge, and a solid support retained within the vial above the frit after the flushing procedure. As discussed above, McGraw does not teach that a pressure-tight seal is provided **directly** between a vial and a cartridge. In contrast, McGraw teaches that the column is inserted into the Luer fitting 15, which has previously been inserted into the bulkhead 16. Thus, it is clear from the teachings of McGraw that a pressure-tight seal is not provided **directly** between the column 11 and the bulkhead 16, but that the Luer fitting 15 is positioned between the column 11 and the bulkhead 16. McGraw also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. McGraw does not teach a flushing procedure by **only** forming a pressure differential to expel material from the vial. For at least these reasons, the independent Claim 52 is allowable over the teachings of McGraw.

Within the previous Office Action, Claims 27-30, 35, 36, 38, 45-48 and 50-52 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,240,680 to Zuckermann et al. (hereinafter "Zuckermann"). The applicants respectfully disagree. Zuckermann teaches an actuation means for use in solid phase chemical synthesis involving arrays of modular reaction vessels. The apparatus taught by Zuckermann includes a plurality of reaction vessels arranged in a substantially linear array. [Zuckermann, Abstract] The reaction vessels of Zuckermann include modular valving means capable of being actuated to drain or close each of the reaction vessels in the array. [Zuckermann, Abstract] Specifically, Zuckermann teaches that a plug 28 is connected to a three-way valve 30 via tubing 32 to a source 36 of substantially inert gas. [Zuckermann, col. 3, lines 42-46, Figures 2 and 3] Zuckermann does not teach that a pressure-tight seal is provided directly between the column and a cartridge. Further, Zuckermann does not teach that a solid support is retained within the vial. Zuckermann also does not teach that a solid support is retained within the vial directly above a frit. Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel.

It is further stated within the Response to Arguments section of the previous Office Action, that the pressure tight seal is beyond the scope of the claims. The Applicants respectfully disagree and do not understand how a limitation clearly included within the claims can just be unilaterally dismissed or overlooked. As discussed in detail above, the pressure tight seal limitation gives meaning to the claims. Without the exterior dimension forming a pressure-tight seal directly between the vial and the cartridge, the pressure differential could not be created for flushing procedures. As described above, it is clearly specified within the claims that a pressure-tight seal is provided directly between the vial and the cartridge. It is further specified in the claims that a consistent flow is maintained during flushing procedures by only forming a pressure differential to expel material. As discussed in detail above, without the exterior dimension forming a pressure-tight seal directly between the vial and the cartridge, the pressure differential could not be created for flushing procedures. Accordingly, the pressure tight seal limitation in the claims cannot just be overlooked.

In contrast to the teachings of Zuckermann, the vial of the present invention includes a support held within the vial directly above a frit. [Present Specification, page 3, lines 24-25] The interior of each vial is precision bored to ensure a tight consistent seal with the corresponding frit. [Present Specification, page 3, lines 25-27] The vials are held within a cartridge. [Present Specification, page 3, lines 15-16] The exterior of each vial also has a precise dimension to consistently fit within the cartridge and provide a pressure tight seal around each vial directly within the cartridge. [Present Specification, page 3, line 27 - page 4, line 2] As discussed above, Zuckermann does not teach that a pressure-tight seal is provided directly between the column and a cartridge. Further, Zuckermann does not teach that a solid support is retained within the vial. Zuckermann also does not teach that a solid support is retained within the vial directly above a frit. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel.

The independent Claim 27 is directed to a vial comprising a bored interior having a consistent dimension to hold a frit for retaining material within the vial **directly** above the frit and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial and a *solid support* retained within the vial above the frit after the flushing procedure. As discussed above, Zuckermann does not teach that a solid support is retained within the vial **directly** above a frit. As further discussed

above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 27 is allowable over the teachings of Zuckermann.

Claim 28 is dependent on the independent Claim 27 and adds a further limitation specifying that the vial comprises an exterior dimension to fit **directly** within a receiving hole of a cartridge, thereby providing a pressure-tight seal directly between the vial and the cartridge. As discussed above, Zuckermann does not teach that a pressure-tight seal is provided **directly** between a vial and a cartridge. For at least these reasons, the Claim 28 is allowable over the teachings of Zuckermann.

Claims 28 and 40 are both dependent on the independent Claim 27. As described above, the independent Claim 27 is allowable over the teachings of Zuckermann. Accordingly, the Claims 28 and 40 are both also allowable as being dependent on an allowable base claim.

The independent Claim 29 is directed to a vial comprising an exterior dimension to fit directly within a receiving hole of a cartridge thereby providing a pressure-tight seal **directly** between the vial and the cartridge, a bored interior having a consistent dimension to maintain a consistent flow through the bored interior during flushing procedures by **only** forming a pressure differential to expel material from the vial and a *solid support* retained within the vial above the frit after flushing procedures. As discussed above, Zuckermann does not teach that a pressure-tight seal is provided **directly** between the column and a cartridge. As further discussed above, Zuckermann does not teach that a solid support is retained within the vial above a frit. Zuckermann also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 29 is allowable over the teachings of Zuckermann.

Claims 30 and 42 are both dependent on the independent Claim 29. As described above, the independent Claim 29 is allowable over the teachings of Zuckermann. Accordingly, the Claims 30 and 42 are both also allowable as being dependent on an allowable base claim.

The independent Claim 35 is directed to a vial. The vial of Claim 35 comprises a bored interior having a consistent dimension to hold a frit for retaining material above the frit and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial, a top opening through which material is dispensed into the bored interior, a bottom opening of a diameter to retain material within the bored interior when no pressure differential is applied and through which material is flushed during the flushing procedure, an exterior dimension to fit **directly** within a receiving hole of a cartridge, to form a pressure-tight seal **directly** between the vial and the cartridge when the vial is inserted into a receiving hole of the cartridge and *a solid support* retained within the vial above the frit after the flushing procedure. As discussed above, Zuckermann does not teach that a pressure-tight seal is provided **directly** between a vial and a cartridge. As further discussed above, Zuckermann does not teach that a solid support is retained within the vial above a frit. Zuckermann also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 35 is allowable over the teachings of Zuckermann.

Claim 44 is dependent on the independent Claim 35. As described above, the independent Claim 35 is allowable over the teachings of Zuckermann. Accordingly, the Claim 44 is also allowable as being dependent on an allowable base claim.

The independent Claim 36 is directed to a vial. The vial of Claim 36 comprises a frit, *a solid support*, a bored interior having a consistent dimension to hold the frit for retaining the solid support above the frit and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial, wherein the solid support and material formed on the solid support is retained above the frit, within the vial, during a flushing procedure, a top opening through which material is dispensed into the bored interior, a bottom opening of a diameter to retain material within the bored interior when no pressure differential is applied and through which material is flushed during the flushing procedure and an exterior dimension to fit **directly** within a receiving hole of a cartridge to form a pressure-tight seal **directly** between the vial and a cartridge when the vial is inserted into a receiving hole of the cartridge. As discussed above, Zuckermann does not teach that a pressure-

tight seal is provided **directly** between a vial and a cartridge. As further discussed above, Zuckermann does not teach that a solid support is retained within the vial above a frit. Zuckermann also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 36 is allowable over the teachings of Zuckermann.

Claims 37 and 38 are both dependent on the independent Claim 36. As described above, the independent Claim 36 is allowable over the teachings of Zuckermann. Accordingly, the Claims 37 and 38 are both also allowable as being dependent on an allowable base claim.

The independent Claim 45 is directed to a vial including a bored interior having a consistent dimension to hold a frit, the vial consisting essentially of a single frit for retaining material within the vial **directly** above the single frit and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial and *a solid support* retained within the vial above the single frit after the flushing procedure. As discussed above, Zuckermann does not teach that a solid support is retained within the vial **directly** above a single frit. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 45 is allowable over the teachings of Zuckermann.

The independent Claim 46 is directed to a vial including an exterior dimension to fit directly within a receiving hole of a cartridge thereby providing a pressure-tight seal **directly** between the vial and the cartridge, a bored interior having a consistent dimension to maintain a consistent flow through the bored interior during flushing procedures by **only** forming a pressure differential to expel material from the vial and *a solid support* retained within the vial above a frit, the vial consisting essentially of a single frit, after flushing procedures. As discussed above, Zuckermann does not teach that a pressure-tight seal is provided **directly** between the column and a cartridge. As further discussed above, Zuckermann does not teach that a solid support is

retained within the vial above a single frit. Zuckermann also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 46 is allowable over the teachings of Zuckermann.

The independent Claim 47 is directed to a vial. The vial of Claim 47 comprises a bored interior having a consistent dimension, a material for growing a polymer chain and a frit for retaining the material within the vial **directly** above the frit and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial and a *solid support* retained within the vial above the frit after the flushing procedure, the vial consisting essentially of a single frit. As discussed above, Zuckermann does not teach that a solid support is retained within the vial **directly** above a frit. Zuckermann also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 47 is allowable over the teachings of Zuckermann.

The independent Claim 48 is directed to a vial. The vial of Claim 48 comprises a bored interior having a consistent dimension to hold a frit, the vial consisting essentially of a single frit for retaining material within the vial directly above the single frit without any additional frits and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial and a *solid support* retained within the vial above the single frit after the flushing procedure. As discussed above, Zuckermann does not teach that a solid support is retained within the vial above a single frit. Zuckermann also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above,

Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 48 is allowable over the teachings of Zuckermann.

The independent Claim 50 is directed to a plurality of vials each comprising a bored interior having a consistent dimension to hold a frit, wherein the consistent dimension is consistent for each of the plurality of vials, each of the vials consisting essentially of a single frit for retaining material within the vial directly above the single frit and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial and a solid support retained within the vial above the single frit after the flushing procedure. As discussed above, Zuckermann does not teach that a solid support is retained within the vial above a single frit. Zuckermann also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 50 is allowable over the teachings of Zuckermann.

The independent claim 51 is directed to a plurality of vials each comprising an exterior dimension to fit **directly** within a receiving hole of a cartridge thereby providing a pressure-tight seal **directly** between the vial and the cartridge, wherein the exterior dimension is consistent for each of the plurality of vials such that any of the vials will consistently fit within the receiving hole of the cartridge, each of the plurality of vials further comprising a bored interior having a consistent dimension to maintain a consistent flow through the bored interior during flushing procedures by **only** forming a pressure differential to expel material from the vial and a solid support retained within the vial directly above a frit, the vial consisting essentially of a single frit, after flushing procedures. As discussed above, Zuckermann does not teach that a pressure-tight seal is provided **directly** between the column and a cartridge. As also discussed above, Zuckermann does not teach that a solid support is retained within the vial above a single frit. Zuckermann also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from

the reaction vessel. For at least these reasons, the independent Claim 51 is allowable over the teachings of Zuckermann.

The independent Claim 52 is directed to a plurality of vials. Each of the plurality of vials of Claim 52 comprise a bored interior having a consistent dimension to hold a frit for retaining material above the frit and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial, wherein the consistent dimension is consistent for each of the plurality of vials, a top opening through which material is dispensed into the bored interior, a bottom opening of a diameter to retain material within the bored interior when no pressure differential is applied and through which material is flushed during the flushing procedure, an exterior dimension to fit **directly** within a receiving hole of a cartridge to form a pressure-tight seal **directly** between the vial and the cartridge when the vial is inserted into a receiving hole of the cartridge, wherein the exterior dimension is consistent for each of the plurality of vials such that any of the vials will consistently fit within the receiving hole of the cartridge, and a solid support retained within the vial above the frit after the flushing procedure. As discussed above, Zuckermann does not teach that a pressure-tight seal is provided **directly** between the column and a cartridge. As also discussed above, Zuckermann does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Zuckermann does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Zuckermann teaches that the three-way valve 30 is used to extract material from the reaction vessel. For at least these reasons, the independent Claim 52 is allowable over the teachings of Zuckermann.

Within the previous Office Action, Claims 27-30, 35, 36, 38, 45-48 and 50-52 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,609,826 to Cargill et al. (hereinafter "Cargill"). The applicants respectfully disagree. Cargill teaches methods and apparatus for the generation of chemical libraries. Cargill teaches that reaction chambers 110 include a body portion 112 having a top opening 118 and a gas input port 122. [Cargill, col. 7, lines 45-56, Figure 2A] Cargill also teaches that a lower portion 114 of the reaction chamber 110 can receive a frit 124. [Cargill, col. 7, lines 65-67, Figure 2A] The reaction chamber 110 of Cargill also includes a funnel portion 130 and a generally cylindrical drain tube 132, which includes an annular sealing bead 134 to create a seal against the outside of an S-shaped trap tube 136. [Cargill, col. 8, lines 11-21, Figures 2A and 3] Cargill teaches that the trap tube 136

connects to a drain tube 138 such that when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. [Cargill, col. 8, lines 23-29, Figures 2A and 3] Cargill does not teach that a pressure-tight seal is provided **directly** between a column and a cartridge. Cargill also does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138.

It is further stated within the Response to Arguments section of the previous Office Action, that the pressure tight seal is beyond the scope of the claims. The Applicants respectfully disagree and do not understand how a limitation clearly included within the claims can just be unilaterally dismissed or overlooked. As discussed in detail above, the pressure tight seal limitation gives meaning to the claims. Without the exterior dimension forming a pressure-tight seal directly between the vial and the cartridge, the pressure differential could not be created for flushing procedures. As described above, it is clearly specified within the claims that a pressure-tight seal is provided directly between the vial and the cartridge. It is further specified in the claims that a consistent flow is maintained during flushing procedures by **only** forming a pressure differential to expel material. As discussed in detail above, without the exterior dimension forming a pressure-tight seal directly between the vial and the cartridge, the pressure differential could not be created for flushing procedures. Accordingly, the pressure tight seal limitation in the claims cannot just be overlooked.

In contrast to the teachings of Cargill, the vial of the present invention includes a support held within the vial directly above a frit. [Present Specification, page 3, lines 24-25] The interior of each vial is precision bored to ensure a tight consistent seal with the corresponding frit. [Present Specification, page 3, lines 25-27] The vials are held within a cartridge. [Present Specification, page 3, lines 15-16] The exterior of each vial also has a precise dimension to consistently fit within the cartridge and provide a pressure tight seal around each vial **directly** within the cartridge. [Present Specification, page 3, line 27 - page 4, line 2] As discussed above, Cargill does not teach that a pressure-tight seal is provided directly between the column and a cartridge. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure

differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138.

The independent Claim 27 is directed to a vial comprising a bored interior having a consistent dimension to hold a frit for retaining material within the vial directly above the frit and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial and a solid support retained within the vial above the frit after the flushing procedure. As discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 27 is allowable over the teachings of Cargill.

Claim 28 is dependent on the independent Claim 27 and adds a further limitation specifying that the vial comprises an exterior dimension to fit **directly** within a receiving hole of a cartridge, thereby providing a pressure-tight seal directly between the vial and the cartridge. As discussed above, Cargill does not teach that a pressure-tight seal is provided **directly** between a vial and a cartridge. For at least these reasons, the Claim 28 is allowable over the teachings of Cargill.

Claims 28 and 40 are both dependent on the independent Claim 27. As described above, the independent Claim 27 is allowable over the teachings of Cargill. Accordingly, the Claims 28 and 40 are both also allowable as being dependent on an allowable base claim.

The independent Claim 29 is directed to a vial comprising an exterior dimension to fit directly within a receiving hole of a cartridge thereby providing a pressure-tight seal **directly** between the vial and the cartridge, a bored interior having a consistent dimension to maintain a consistent flow through the bored interior during flushing procedures by **only** forming a pressure differential to expel material from the vial and a solid support retained within the vial above the frit after flushing procedures. As discussed above, Cargill does not teach that a pressure-tight seal is provided **directly** between the column and a cartridge. As further discussed above, Cargill does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Cargill

teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 29 is allowable over the teachings of Cargill.

Claims 30 and 42 are both dependent on the independent Claim 29. As described above, the independent Claim 29 is allowable over the teachings of Cargill. Accordingly, the Claims 30 and 42 are both also allowable as being dependent on an allowable base claim.

The independent Claim 35 is directed to a vial. The vial of Claim 35 comprises a bored interior having a consistent dimension to hold a frit for retaining material above the frit and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial, a top opening through which material is dispensed into the bored interior, a bottom opening of a diameter to retain material within the bored interior when no pressure differential is applied and through which material is flushed during the flushing procedure, an exterior dimension to fit **directly** within a receiving hole of a cartridge, to form a pressure-tight seal directly between the vial and the cartridge when the vial is inserted into a receiving hole of the cartridge and a solid support retained within the vial above the frit after the flushing procedure. As discussed above, Cargill does not teach that a pressure-tight seal is provided **directly** between a vial and a cartridge. Cargill also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 35 is allowable over the teachings of Cargill.

Claim 44 is dependent on the independent Claim 35. As described above, the independent Claim 35 is allowable over the teachings of Cargill. Accordingly, the Claim 44 is also allowable as being dependent on an allowable base claim.

The independent Claim 36 is directed to a vial. The vial of Claim 36 comprises a frit, a solid support, a bored interior having a consistent dimension to hold the frit for retaining the solid support above the frit and maintain a consistent flow through the bored interior during a flushing procedure by only forming a pressure differential to expel material from the vial, wherein the solid support and material formed on the solid support is retained above the frit, within the vial, during a flushing procedure, a top opening through which material is dispensed

into the bored interior, a bottom opening of a diameter to retain material within the bored interior when no pressure differential is applied and through which material is flushed during the flushing procedure and an exterior dimension to fit **directly** within a receiving hole of a cartridge to form a pressure-tight seal directly between the vial and a cartridge when the vial is inserted into a receiving hole of the cartridge. As discussed above, Cargill does not teach that a pressure-tight seal is provided **directly** between a vial and a cartridge. Cargill also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 36 is allowable over the teachings of Cargill.

Claims 37 and 38 are both dependent on the independent Claim 36. As described above, the independent Claim 36 is allowable over the teachings of Cargill. Accordingly, the Claims 37 and 38 are both also allowable as being dependent on an allowable base claim.

The independent Claim 45 is directed to a vial including a bored interior having a consistent dimension to hold a frit, the vial consisting essentially of a single frit for retaining material within the vial **directly** above the single frit and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial and a solid support retained within the vial above the single frit after the flushing procedure. As discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 45 is allowable over the teachings of Cargill.

The independent Claim 46 is directed to a vial including an exterior dimension to fit directly within a receiving hole of a cartridge thereby providing a pressure-tight seal **directly** between the vial and the cartridge, a bored interior having a consistent dimension to maintain a consistent flow through the bored interior during flushing procedures by **only** forming a pressure differential to expel material from the vial and a solid support retained within the vial above a frit, the vial consisting essentially of a single frit, after flushing procedures. As discussed above,

Cargill does not teach that a pressure-tight seal is provided **directly** between the column and a cartridge. Cargill also does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 46 is allowable over the teachings of Cargill.

The independent Claim 47 is directed to a vial. The vial of Claim 47 comprises a bored interior having a consistent dimension, a material for growing a polymer chain and a frit for retaining the material within the vial **directly** above the frit and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial and a solid support retained within the vial above the frit after the flushing procedure, the vial consisting essentially of a single frit. As discussed above, Cargill does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 47 is allowable over the teachings of Cargill.

The independent Claim 48 is directed to a vial. The vial of Claim 48 comprises a bored interior having a consistent dimension to hold a frit, the vial consisting essentially of a single frit for retaining material within the vial directly above the single frit without any additional frits and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial and a solid support retained within the vial above the single frit after the flushing procedure. As discussed above, Cargill does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by only forming a pressure differential to expel material. As described above, Cargill teaches that the annular

sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 48 is allowable over the teachings of Cargill.

The independent Claim 50 is directed to a plurality of vials each comprising a bored interior having a consistent dimension to hold a frit, wherein the consistent dimension is consistent for each of the plurality of vials, each of the vials consisting essentially of a single frit for retaining material within the vial directly above the single frit and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial and a solid support retained within the vial above the single frit after the flushing procedure. As discussed above, Cargill does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 50 is allowable over the teachings of Cargill.

The independent claim 51 is directed to a plurality of vials each comprising an exterior dimension to fit **directly** within a receiving hole of a cartridge thereby providing a pressure-tight seal **directly** between the vial and the cartridge, wherein the exterior dimension is consistent for each of the plurality of vials such that any of the vials will consistently fit within the receiving hole of the cartridge, each of the plurality of vials further comprising a bored interior having a consistent dimension to maintain a consistent flow through the bored interior during flushing procedures by **only** forming a pressure differential to expel material from the vial and a solid support retained within the vial directly above a frit, the vial consisting essentially of a single frit, after flushing procedures. As discussed above, Cargill does not teach that a pressure-tight seal is provided **directly** between the column and a cartridge. As also discussed above, Cargill does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Cargill teaches that the annular

sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 51 is allowable over the teachings of Cargill.

The independent Claim 52 is directed to a plurality of vials. Each of the plurality of vials of Claim 52 comprise a bored interior having a consistent dimension to hold a frit for retaining material above the frit and maintain a consistent flow through the bored interior during a flushing procedure by **only** forming a pressure differential to expel material from the vial, wherein the consistent dimension is consistent for each of the plurality of vials, a top opening through which material is dispensed into the bored interior, a bottom opening of a diameter to retain material within the bored interior when no pressure differential is applied and through which material is flushed during the flushing procedure, an exterior dimension to fit **directly** within a receiving hole of a cartridge to form a pressure-tight seal **directly** between the vial and the cartridge when the vial is inserted into a receiving hole of the cartridge, wherein the exterior dimension is consistent for each of the plurality of vials such that any of the vials will consistently fit within the receiving hole of the cartridge, and a solid support retained within the vial above the frit after the flushing procedure. As discussed above, Cargill does not teach that a pressure-tight seal is provided **directly** between the column and a cartridge. As also discussed above, Cargill does not teach that a vial includes a bored interior having a consistent dimension to maintain a consistent flow through the bored interior. As further discussed above, Cargill does not teach maintaining a consistent flow through the bored interior of a vial during a flushing procedure by **only** forming a pressure differential to expel material. As described above, Cargill teaches that the annular sealing bead 134 creates a seal and when the reaction chamber 110 is pressurized, liquid flows through the trap tube 136 and out the drain tube 138. For at least these reasons, the independent Claim 52 is allowable over the teachings of Cargill.

New Claims:

By the above amendments, new Claims 53-58 have been added. The independent Claims 53 and 56 add the limitation that the vial is plastic. Claims 54 and 57 are dependent on the independent Claims 53 and 56, respectively, and add the limitation that the plastic vial is constructed of a polymer. Claims 55 and 58 add the further limitation that the polymer comprises polyethylene. No new matter is added by these additional limitations. In the present specification, it is taught that “[p]referably, each vial 181 is formed of polyethylene by a molded process.” [Present Specification, page 14, lines 9-10] Accordingly, there is support within the

original specification for this additional limitation. None of the cited references, McGraw, Zuckerman or Cargill teach a plastic vial comprising an exterior dimension to fit directly within a receiving hole of a cartridge. Accordingly, new Claims 53-58 are allowable over the teachings of McGraw, Zuckerman and Cargill.

Applicants respectfully submit that the claims, as amended, are now in a condition for allowance, and allowance at an early date would be appreciated. Should the Examiner have any questions or comments, they are encouraged to call the undersigned at (408) 530-9700 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,
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